GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, DECEMBER 19, 1894.

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Deciduous Trees in Winter.

PERHAPS the primary notion conveyed to most minds by the word "tree" is that of a mass of foliage, and yet in this climate by far the larger proportion of our trees are leafless for six months every year. It is far from being true, however, that trees are stripped of their attractiveness when their leaves fall. Indeed, a good argument could be made to prove that trees with deciduous leaves are more beautiful as a class, taking the season through, than coniferous or even broad-leaved evergreen trees. There is a certain monotony in the look of trees with persistent foliage which one would hesitate to pronounce tiresome, but certainly a livelier interest is excited by trees which pass through a series of striking transformations from month to month as the soft colors of the bursting leaves in spring develop into the green luxuriance of summer, which in its turn gives place to the glowing tints of autumn. All these changes give a diversity and animation which is not possible to any evergreen tree. Even the falling of the leaves only uncovers beauties which they had concealed—beauty in structural symmetry of the supporting trunk and limbs, beauty in the graceful disposition of the smaller branches, and beauty of form and texture and color in every detail.

Indeed, it is only when the tree is stripped naked that we can see the reasons for its characteristic beauty when in full leaf. Next to their general outline the most marked distinction between trees in summer is found in the way their foliage breaks into areas of light and shade. The Oak, with its deep shadows contrasting strongly with the masses of leaves which stand out boldly to catch all the light, and the smooth sunny surface of a young Maple, where the alternating spaces of light and shadow are smaller and more numerous, may be cited as two specially distinct types of trees. But the structural reason for this superficial difference is readily seen in winter. The massive trunk of the Oak separates into a few large branches, and these leave deep cavernous openings for heavy shadows in the foliage which are not possible in the Maple, with its skeleton of numerous slender branches radiating at a uniform angle from the central stem. It is not, therefore, the covering of leaves, but the framework of the tree, which determines not only its general contour but fixes its expression, whether of cheerfulness or gloom, of dignity or grace.

But it is not only the general structure of trees that makes them worth studying in winter. There are distinctive beauties of detail in every leafless tree which give it an individual interest. The bark may be as smooth and fine-grained as it is in the Beech or Hornbeam, or it may be ridged and furrowed, or plated over with protective scales, but it is always interesting, and the browns and russets and grays of its large limbs have a richness of color which is peculiarly their own, while the tracery which the slender branchlets make against the sky is a revelation of delicacy and grace which is never seen until the trees are bare. The columnar strength of the great trunks with the beauty of their weather-worn and lichen-stained bark is never so manifest as when they rise darkly above a glittering carpet of snow, while the lace-like grace of the spray is brought out with charming distinctness by the purity and brilliancy of the winter sky beyond. Indeed, the fullness and clearness of the light in frosty weather give an added charm to every element of the landscape, and the bare trees when bathed in it acquire a new and indescribable beauty. Then there are winter days when some special atmospheric conditions quite transfigure the trees and present them to the eye as new creations. They may be white as alabaster on their stormy side when the damp snow clings to trunk and limb; or every twig may sparkle in a fleece of hoar-frost; or all the trees in a broad landscape may be cased in polished silver, with every branch arching under its burden of transparent ice. In fact, the winter aspect of trees is no less varied than their appearance in full leaf, so that to one who habitually observes them merely as beautiful natural objects, as truly as to the systematic student of botany who takes note of their winter buds and other distinguishing characteristics, no dull season ever comes.

In most of our older cities where there is anything like an adequate supply of public parks, this result has been due to the self-denying labors of a few forward-looking men. Thirty years ago there was nothing like a popular appreciation of the value of recreation-grounds to a city, and, therefore, no urgent demand for them, but in every case one or two unselfish workers have taken the cause to heart and labored untiringly to arouse the slothful public to a sense of what was needed. These men encountered discouragements at every step in the apathy of their hearers, and in the stolid resistance of town authorities to what seemed to them unremunerative outlay, and yet they persisted, and some of them are still living to see their prophecies become fact and all their arguments more than vindicated. They worked for no reward, but it seems to be an injustice that these early educators of public opinion, who had, in the first place, to create the taste they wished to gratify, have received so little recognition. It is not creditable to this city that among the so-called works of art in Central Park there is no statue to Downing, and in many other cities there is not even a tablet within their park gates to commemorate the self-denying efforts of their real originators—men whose very names can only be ascertained by searching through the early park reports, and even here they too often receive but scanty mention.

But there is another service connected with parks which men of wealth can render. The city of Hartford seems to be conspicuously fortunate in having received from three different citizens within a short time very considerable areas of land to be devoted to public use. Munificent gifts for similar purposes have been made before, but men who have wished to make some civic endowment have usually chosen to do it in some other way. In almost all of our important cities public-spirited men have founded libraries, hospitals, galleries of art and museums of various sorts, while comparatively few parks or grounds have thus

been presented to the public. But certainly here is an inviting field for men of wealth who are studying how they can be wisely generous. It is true that city officials ought to consider it as much their duty to furnish the people with broad stretches of park-land for their refreshment as it is to give them a pure water-supply or a good system of public schools. As a matter of fact, few of our cities do supply the actual needs of their people in this respect, and there is little danger that the authorities will furnish too much land for public recreation. It is to be hoped, therefore, that the example of these patriotic citizens of Hartford will commend itself to men of wealth in other cities who wish to do a real service to their cotemporaries, and to leave behind them an unfailing source of health and refreshment for coming generations.

The Cottonwood for Forest-planting on the Plains.

THE Cottonwood has been called the pioneer tree of the western plains, and certainly it has formed fully three-fourths of all the plantings thus far made on them. Growing along all the streams, from the Missouri River to the Rocky Mountains, and being propagated without difficulty, both from cuttings and from seed, it has been the most available species in the west. Add to this its rapidity of growth, its promise of forming quickly a protection from wind and sun, and its great popularity is fully explained. In the majority of cases it has proved a disappointment to the planter. It is only at home where its roots are within reach of an abundant supply of water, and hence its true habitat is on the borders of streams or lakes—preferably the former. While its seedlings make dense thickets on the sandbars along western rivers, the great majority of the trees die within a few years, leaving single specimens, remote from one another, to come to full maturity.

Had these facts been observed by the pioneers of the west much disappointment and consequent discouragement to forest-planting would have been obviated. In point of fact, the Cottonwood has been set in dense plantations, on high and low ground alike, and from frequent failure, the result of a total disregard of the needs of the species, it has been hastily and erroneously inferred that "forest-tree growing is impossible on the plains." Where planted in single rows, as along highways or division lines, I know Cottonwood-trees in South Dakota, even on high land, that are in fine condition after twenty years from setting. And in low land, where the conditions are favorable, the trees make remarkable growths, even when unmixed with other species; a splendid example of the growth can be seen on the farm of the Nebraska State University, at Lincoln, and another, equally good, is the Railroad plantation near Hutchinson, Kansas. Under irrigation, pure groves of Cottonwood, ten to twenty years planted, have quite changed the face of the country about Rocky Ford, Colorado; but in all these groves, of from ten to twenty acres in extent, an abundant water-supply was available for the trees. On the other hand, there are a number of groves of similar size in Brookings County, South Dakota, and I daresay throughout the west, that were in thrifty condition three years ago, which the last two dry seasons have completely killed.

The Cottonwood may have a place in western planting, but it should be a very small place, for there are many trees, in every way better, that can be as easily grown.

Washington. *Charles A. Keffer.*

The So-called Florida Sea Beans.

MOST visitors to Florida have seen the beautiful sea-bean jewelry offered for sale in many of the principal cities and towns, and those who have been to the sea-coasts, especially along the eastern and southern sections of the state, have generally had the great satisfaction of finding some of the beans in their rough state.

But few persons know what they really are, or where they originally came from. In this country they are known as "Florida sea beans," and it is the common belief that they grow on a marine plant, or, at any rate, somewhere on the sea-coasts of the state or among the numerous keys bordering on it.

The so-called sea beans found on the Atlantic and Gulf coasts of Florida, and more rarely to the northward and westward, belong to four genera, only one of which grows in this country. Among the objects occasionally washed ashore on the peninsula (see No. 5, Fig. 79) are marble-like seeds of a light gray color, having a natural polish. These are the fruits of a tall spreading shrub, not a climber, known in its native countries as the "Nicker-tree," Cæsalpinia bonducella. There the seeds are called nicker nuts or bonduc nuts. Most of those found on our shores are waifs from the West Indies and Central America, although the species was discovered many years since growing on the extreme southern coast of Florida, some of the nuts washed ashore having taken root and grown to bearing size. The genus contains about forty species, widely distributed in tropical countries of both hemispheres. Many of the species grow on or near the sea-coasts, where the nuts readily find their way into the water, and are thus disseminated far and wide. The nuts are generally about the size of marbles, and nearly as hard.

The musical name of the Florida species, bonducella, is partially derived from the Arabic, bondog, signifying a necklace, for which purpose, and for bracelets, rosaries, etc., the nuts are commonly used. The leaves of the plant are bipinnate, and its branches and stems bear hooked prickles, like the Locust, generally distributed in pairs. The seed-pods are two or three inches in length, flattened, with rounded ends, and contain two nuts; they are covered with sharp prickles, like the seed-pods of the common Jimson-weed. The entire plant is used by the native Indian doctors. The nuts are extremely bitter, and are employed as a tonic and vermifuge. They also yield an oil believed to possess great virtue in palsy, etc. Probably their medicinal qualities have never been fully tested in our laboratories.

Another species, Cæsalpinia pulcherrima, is cultivated in gardens on the Island of Barbadoes, where it is known as the "Pride of Barbadoes." I have heard that this species has been introduced into southern Texas, but cannot verify the report.

The most common beans found on the Florida coast belong to the genus Mucuna, one of the Leguminosæ, represented in the illustration by the upright rows numbered 1, 2 and 3. The species, of which there are several, are widely dispersed in tropical regions, being common to Asia, Australia, the islands of the Pacific, South and Central America and the West Indies. All are twiners or tall climbers, with trifoliate leaves and large purple, white, yellow or greenish flowers. This genus is a great annoyance to travelers, the leathery seed-pods being thickly covered with stinging hairs, resembling the covering of a red caterpillar. These are easily detached from the pod, and if they happen to fall on exposed parts of the person cause great irritation and soreness.

Row No. 1, Fig. 79, shows Mucuna altissima, more frequently picked up than any others. The average size is about one inch in diameter, and usually quite flattened. The raphe, or ridge, corresponding to the eye of a common bean, from one-eighth to three-sixteenths of an inch in width, extends around one-fifth of the circumference, and in this species is invariably jet-black. (The lower beans in the illustration are turned on their edges to show the raphe.) The surface of the bean is closely pitted or granular, and of stony hardness. The colors are various, some being light or dark brown, often nearly black, and others of a grayish or fawn hue. They are usually beautifully mottled with black—impossible to show in a photograph. The pods contain from one to three seeds.

The bean next to the bottom, in Row No. 2, belongs to another species, less common than the one last de-

scribed. The shape is somewhat square, and the raphe, which extends around one-third of the bean, and corresponds more with the ground color, is usually yellowish red. This bean has greater roughness than any of the others; it is also mottled or streaked with black. The next two beans above, in the same row, are evidently varieties. Their color is a rich chocolate red, without mottles. The large bean at the top of the second row (No. 7) is the fruit of another species of the genus Mucuna. It is quite distinct from the others in lacking the mottles. The pods contain one or two beans each.

Before leaving this interesting group I will mention one more species, Mucuna pruriens, which affords the kiwach or cow-itch of medicine, a celebrated remedy for intestinal parasites. The seed-pods are four or five inches in length, shaped somewhat like the Italic letter *f*, and covered with a thick coating of short, stiff, needle-like hairs, of a light brown color. The ends of the hairs are barbed or serrated;

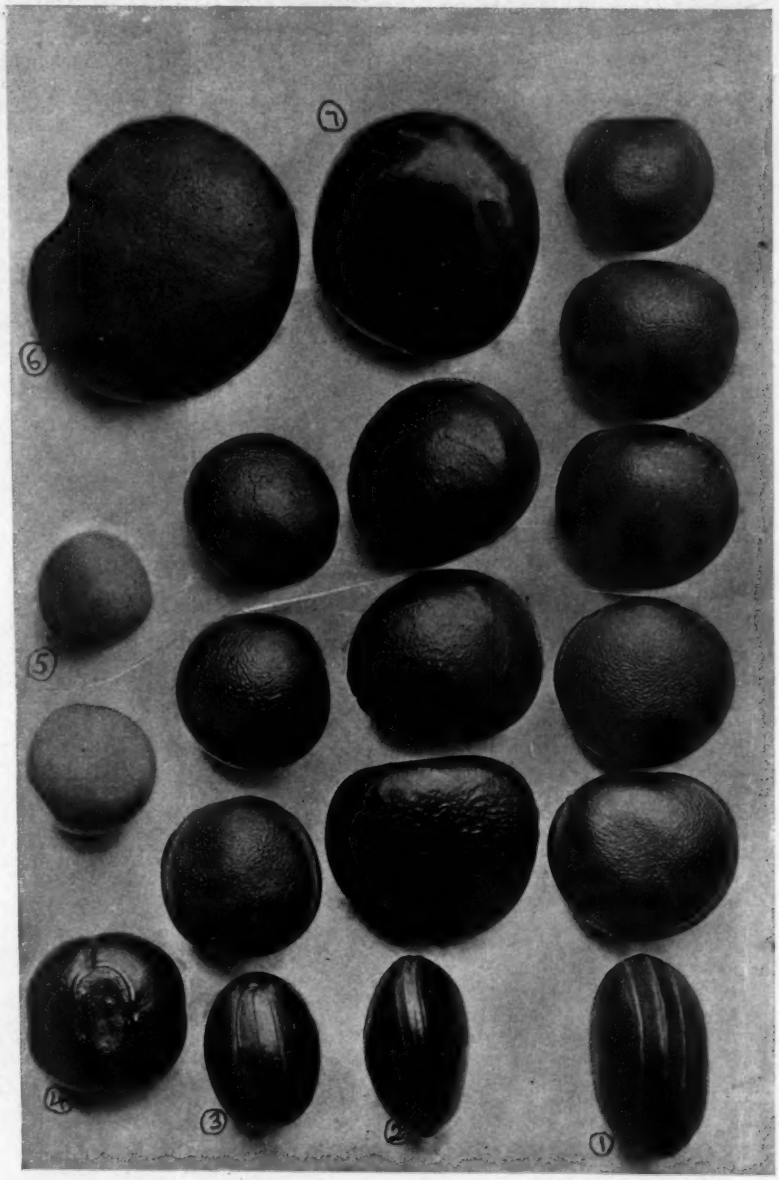

Fig. 79.—Florida Sea Beans.—See page 502.

1, 2, 3 and 7. Fruits of different species of Mucuna. 4. Fruit of Macadamia ternifolia. 5. Fruit of Cæsalpinia bonducella. 6. Fruit of Entada scandens.

size, color and shape. The form is thick and flattened, with more square-like edges, and a raphe nearly double the width of any other in the collection. The color is very dark, almost black. The light appearance of this particular specimen is owing to the fact that one side has been polished. It is not often found on our shores.

In row No. 3 we have still another species, considerably smaller and comparatively globular. The common colors are various shades of mouse, delicate brown or red, always when taken internally, mixed with molasses, they dislodge the worms by sticking into their bodies, the action being entirely mechanical. The common name cow-itch, or cowage, is a corruption of the Hindustani kiwach. The flowers have a disagreeable garlic odor.

The most interesting of all is the celebrated "Queensland nut" (No. 4, in Fig. 79) of Australia, Macadamia ternifolia, the Kindal-kindal of the aboriginal inhabitants. It belongs to the curious order Proteaceæ. The nuts are pro-

duced on a small tree thirty to forty feet in height, having a dense growth of oblong or lanceolate leaves from a few inches to a foot in length, glossy, and serrated with fine prickly teeth. The wood is finely grained and a reddish color, resembling our cherry. It is highly prized for cabinet-work, but as the nuts are even more valuable, furnishing a nutritious food to the natives, timber-cutters are not allowed to fell the trees. The kernel has the flavor of a Brazil or Hazel nut, and the shell is jet-black, polished, and of iron hardness. The shape is nearly square, with rounded corners and flattened top and bottom. A perfect letter C is contained on one side of the nut, as shown in the illustration. A groove surrounds it from edge to edge of the letter. Like the acorn, it is indehiscent, the seed being liberated only by the decay of the shell. The tree is a native of northern New South Wales and Queensland.

In a bulletin of miscellaneous information issued in October last by the Royal Botanic Gardens of the island of Trinidad, it is said that the gardens contain a specimen of the Queensland nut-tree, which has borne fruit in fair quantities since 1891. The tree is twenty-five or thirty feet in height, and is believed to have become thoroughly acclimatized. Plants are being raised from the seed as fast as possible, for it is considered a valuable acquisition.

The tree does not grow on the island outside of the gardens, nor have I been able to learn that it has ever been discovered on any other island or coast of this hemisphere. It is doubtful, therefore, just where the occasional specimens found on the Florida coast come from. Probably some of the nuts have found their way by oceanic currents or in the crops of certain birds, perhaps even in the stomach of fishes, to some locality in the West Indies, where they have taken root and grown to fruitful trees, from whence come the few specimens.

The large bean in the upper left-hand corner of fig. 79, No. 6, is called the Liver Bean (Entada scandens), from the liver-like color. The woody climber which bears it often reaches the tops of the tallest trees. The pods are woody, and attain a length of from two to four feet, and a breadth of three to four inches. They contain from ten to thirty seeds, often two inches in diameter. One in my collection is seven and a half inches in circumference. This genus is common to Australia and many tropical countries, including the West Indies. The kernels are used in some countries for washing the hair and crimping linen.

The iron-like hardness of all of these beans and nuts is proof that Nature intended the germs to have special protection. And it is needed, for the wide distribution of the genera is effected by long voyages in ocean currents, often subjected to delays on sandy beaches under a blazing sun, which would destroy the vitality of most seeds.

The manufacture of sea-bean jewelry has been a regular and paying business in Jacksonville and St. Augustine, Florida, for many years. When first found on the beaches, among seaweed and shells, most of the species are very rough. This roughness is removed, first, by filing with a flat file, followed by vigorous rubbing on fine sand-paper. They are next held on a rapidly revolving felt wheel, on which powdered emery has been sprinkled. The final gloss, which discloses the delicate colors and mottles, is produced by a felt wheel on which a very delicate polishing substance has been rubbed. The jewelers have various ways of mounting the beans and nuts for watch-charms, sleeve-buttons, etc., with initials, monograms, compasses, etc., and readily sell them as souvenirs of a visit to the land of sunny skies.

Charles H. Coe.

Brookland, D. C.

The snow hangs on the Pine-trees as the fruit of the season. In those twigs which the wind has preserved naked there is a warmer green for the contrast. The whole tree exhibits a kind of interior and household comfort, a sheltered and covert aspect. It has the snug, inviting look of a cottage on the moors buried in snow.—*From Thoreau's Winter Journal.*

New or Little-known Plants.

The Muskeag Spruce.

CLOSE to the open water that remains uncovered by the growth of sedges and sphagnum that is filling or covering many of the forest-lakes of Minnesota, little Spruce-trees are stubbornly existing, although they have no mineral earth to grow upon, and one may put them under water by standing upon the bog at their roots. They grow very slowly, the rings of annual accretions of wood on the trunks being sometimes so small as to be invisible without a microscope, and these little, but old, trees are found bearing cones when less than three feet high. After this time nearly all the energy of the tree seems to be devoted to fruiting, and the cone-bearing branches become the only vigorous ones. These are densely crowded near the top of the tree, while the trunk below is often destitute of living branches, although unshaded and growing far from other trees. These dense tufts of dark branches, like plumes upon poles, present a strange spectacle to the traveler who, for the first time, crosses the larger Muskeags, especially at twilight, for he seems to be looking over a weird procession stretching off mile after mile until lost in the distance.

In the smaller Muskeags there is a marked gradation of size from the smallest seedlings by the water in the centre of the bog to the tall, slender trees, sometimes sixty feet high, upon the shores of the basin. As the soil on which these trees grow becomes more firm, branches are developed more freely upon the lower trunk, but such branches are always weak and have a tendency to droop. Some of the tips rise to a level with the base of the branch, but most of the branches fall far below, even hanging like vines against the trunk and shooting out horizontal or slightly ascending branchlets at the tips. Occasionally, for some reason connected with the history of the individual tree, no doubt, a branch or two toward the top has an unusual development and is apt to form a grotesque figure in bold relief against the sky.

While the form that occupies the Muskeag is uncouth and weird, the trees that grow on fertile, but always moist, upland often have much beauty. They are usually found growing in beds of Sphagnum and Ledum, with Betula pumila, Alnus, Salix and Spiræa, but are sometimes seen on higher ground with Larix larcina, Abies balsamea, and even with Betula lutea and B. papyrifera. The cones of both forms are densely clustered upon the upper branches and trunk in such a manner as to be protected by the later-grown branches. They seem to open the second year, and remain attached to the tree many years. They are from half an inch to an inch in length, and have scales that are thin and light-colored upon the edges, where they wrinkle, and appear ragged as they dry before opening. The leaves of the fruiting branches are dense, thick and stiff, a quarter of an inch long, prominently ribbed above and below, and have four or more rows of stomata along each side of the lower rib. The leaves of the lower or non-fruiting branches are a half to seven-sixteenths of an inch long, much more slender and less dense than those upon the fruiting branches. The young branchlets have a dense woolly pubescence that remains several years. It is buff at first, but changes to brown. The bark of the trunk is very shelly, and when fresh is yellowish brown in color.

The trees grow slowly to a height of sixty feet, are cylindrical in form, except for the dense conical top of fruiting branches, and rarely exceed eight feet in diameter. The diameter of the largest trunks noticed is about ten inches. Is this merely the Black Spruce grown under adverse circumstances near its north-western limit? The locality where the pendulous form seems to be most prevalent, and where the photograph (see page 505) was taken, is on a gently sloping but wet sand plain once covered by the waters of Lake Superior, when some four hundred feet above their present level, and near the moraine that

formed their western shore. Although the tree abounds elsewhere, especially northward, nowhere else have the drooping branches seemed so characteristic a feature as in this central part of Carlton County.

Carleton, Minn. *H. B. Ayres.*

Fig. 80.—Upland form of Muskeag Spruce.—See page 504.

Plant Notes.

SYMPHORICARPUS VULGARIS.—This native plant, well known under the name of Coral Berry or Indian Currant, is most useful for parks and other places wherever a mass of low-growing shrubbery is needed. It is a graceful plant with slender branches, and although its flowers are inconspicuous, its foliage is good all summer, and it retains its leaves in a fresh condition until late in autumn, when they bend under their burden of deep or purplish red berries, which are borne abundantly every year. Masses of these plants in Central Park and Prospect Park are still very effective, as the fruit is retained in fair color. No doubt, the Indian Currant would prove very valuable for use on embankments or any other place where something is needed to hold the soil. The Snow Berry, Symphoricarpus racemosus, is a larger shrub, and its clear white fruits contrast well with the red berries of the Indian Currant. There is a variety of S. racemosus called pauciflorus, which is a very dwarf diffusely branched shrub which will thrive on thin and poor soil or in partial shade. We have already

given a figure of the western S. occidentalis (see vol. iii., page 297), a species which inhabits rocky wooded banks from Michigan to Colorado and Montana, and extending far to the north. It is a good garden-plant for a cold climate, but its greenish white fruit is not as conspicuous or as attractive as that of the Snow Berry.

Sciadophyllum pulchrum.—The last number of the *Revue Horticole* that has reached us contains an interesting article on this plant, which is more often found in collections under the name of Aralia pulchra. It is a small tree with leaves two feet or more across, composed of seven to twelve digitately arranged entire leaflets, and borne on stout stems two to three feet in length. The leaves are light green and very lustrous, and no other plant with which we are acquainted lights up so well under artificial light. It is particularly valuable, therefore, in conservatories connected with dwelling-houses and for the decoration of ball-rooms and large banqueting-halls; and its value for such purposes is increased by its ability, although a native of the tropics, to withstand dirt, rough usage and a comparatively low temperature. As a conservatory or room plant it is as hardy as the well-known Rubber-plant, Ficus elastica, and is far more beautiful. Our contemporary extols the beauty and value of this plant, and complains that it is so difficult to propagate that it is exceedingly rare in European gardens. It is rare, too, in those of the United States, although in the few gardens here where it is known and appreciated no difficulty is found in inducing cuttings made from short lateral shoots to root freely in the sand or moss of the ordinary cutting-bench. Florists who furnish decorations for balls or other festive occasions may well add this plant to the rather small collection of subjects as really valuable for this important and growing industry.

Manettia bicolor.—This plant, which has been in cultivation for more than fifty years, comes originally from Brazil, and it is related to the well-known Bouvardia. It has a twining stem, and strong plants will reach a height of fifteen to twenty feet. Although its flowers are solitary, several appear crowded together on the short lateral branches, and in well-grown plants fresh flowers and buds appear for months at a time throughout the whole length of the vine. When started at the proper time it makes a beautiful outdoor climber, although the flowers are not nearly as large as they are represented in some of the trade catalogues. They are of a brilliant red and yellow, rather less than an inch in length when fully open, and they remain fresh on the vine for a fortnight. When planted out in spring this plant makes an excellent summer climber. At this season no better subject can be used for brightening up the blank walls of a greenhouse, provided they are planted in a bed, for they seem to resent pot-culture. They look better if several plants are set together, so that the mass is kept thick at the bottom. This Manettia is of such easy culture that it is a good subject for the window-garden when it can be grown in a large box. It is subject to the attacks of the mealy bug in the greenhouse, but an occasional syringing with Fir-tree oil will hold this enemy in check. Nearly two years ago Professor Butz, of the State College, Pennsylvania, wrote that one of these vines which had been planted alongside of a Grevillea over which it clambered, was showing about eight hundred flowers when only a year old, a floriferous condition which it had maintained for months.

Iris alata.—This plant, also known as Iris scorpioides, is not uncommon either in cultivation or in its native haunts in southern Europe, Algeria and Morocco. Professor Forster says that Greece is its eastern limit, and that, as far as he knows, it has "never crossed the Bosporus eastward," as none of the eastern members of the group have crossed to the westward. One would not question Professor Forster's information on this point, but importers of the bulbs of this Iris must have noticed lately a mixture of I. Palæstina with them. As these are usually "collected bulbs," it would be interesting to know whether this is because the dealers are careless or because I. alata has been lately found in Palestine as a new habitat. I. alata is one of the Juno group of Irises. They have aroid bulbs, with brownish membraneous coats and fleshy persistent roots. The leaves, which commence to grow in September, usually are light green and Leek-like in growth, all appearing from one base; they are folded and six to nine inches long. The flower is slender, and appears from the centre of the leaves, and its long tube carries it above the foliage. In good forms the flowers are some three or four inches in spread, with falls somewhat frilled and scarcely an inch broad. The claws of the falls have wings, from which the Iris takes its specific name. The color is usually a pale lavender with yellow ridges, and spots and linings of blue on a white ground on the falls. The standards are very small and inconspicuous, but the crests are prominent and frilled. There are numerous forms of this Iris named in catalogues, but our experience is that there are few in cultivation. The cultivation of this Iris offers some difficulties; it is difficult to ripen the bulbs satisfactorily so that it will flower the second season. Both in pots and bedded out in a cool house they will frequently dwindle and often disappear altogether. It is well to have a reserve stock of I. alata in the open, as it is hardy, or the stock may be replaced at small expense, though dealers are apt to send out an unfair proportion of small bulbs, often without roots. The Juno section of Irises, it will be remembered, includes such interesting species as I. Persica, I. orchioides, I. Caucasica and I. sindjarensis, which follow in growth and flowering early in the year.

Cultural Department.

Achimenes.—II.

THE complaint has often been made that many of the Chrysanthemums and Roses in commerce are too much alike, and the same is true, to a very great extent, of Achimenes. There is small pleasure in finding that the long-expected blossom of a variety with a new name is precisely like one or more that we have had for years. I have tried nearly all the varieties which have been offered for sale in Europe for the last twenty years, and desire in this paper to tell my experience, feeling that, though it may not be very readable, it may be useful as a review of a genus seldom fully treated. Many of the kinds I have grown are no longer in the dealers' lists, and I have, therefore, omitted them here; those I mention are still to be had in England, Belgium or Germany. The species number nearly forty, and are natives of America, from Mexico to southern Brazil. The *Genera Plantarum* ranks among them the lovely Gloxinia tubiflora of the *Botanical Magazine*, t. 3971, called by Hanstein, in *Linnæa* (xxvi., page 205), Dolichodeira. It may be useful to say that in the *Genera Plantarum* the name is spelled Dolichoderia, and that in *Durand's Index* the same error is twice repeated. The references to *Linnæa* given in Benth. and Hook. are all wrong. As for the name Achimenes, its meaning is not clear. Dr. Lindley rejects as fantastic the suggestion that it may come from Achæmenes, a king of Persia, while some authorities suppose it to be derived from cheimaino, to suffer cold, in allusion to the tenderness of these plants. The last syllable but one should be accented in pronunciation.

Achimenes longiflora is a Mexican species, easily distinguished by its shining foliage and pear-shaped bulbs, as well as by the shape of its flowers, which consist of a long narrow tube with a flat, spreading limb, which generally lies in a nearly horizontal plane. The type (*Botanical Magazine*, 3980) is blue, of a slightly purple cast, and about two inches in its largest diameter. There are many varieties of this species, and all mentioned in this paper belong to it. Celestial and Cherub differ in no way from the type. There used to be a Celestial which was light blue in color, which is not now to be had, but its place is well filled by Oberon and Dentonia; the latter is an ashy-blue, the other somewhat darker, but much lighter than A. longiflora; both are worthy of cultivation. A. longiflora macrantha, Mauve Queen, Moore's Perfection and Mauve Perfection are much larger than the type, and any one (not any two) of them is worth growing. It is desirable in such a case to get the best, and I have no hesitation in saying that

Mauve Queen is the one to choose. Its flower differs from the typical form by its much larger size and better substance, yet it ought not to crowd A. longiflora out altogether, for its blossoms are by no means as freely produced. A. Jaureguiæ of the *Flore des Serres*, pl. 536, is simply a white variety of A. longiflora; it and its varieties are hardly as vigorous as the blue or purple kinds, but all are very handsome. A. Jaureguiæ or A. longiflora alba (the same catalogue frequently offers it under both names) would be a very desirable plant were it not for A. alba maxima, which is much larger and finer. Its whiteness is perfect, except for a tinge of lemon at one side of the opening in the centre and a touch of purple at the other; this is a kind to be chosen. William Muller and Edw. Boissier are so much like it that they may well be disregarded, but Margarita is quite distinct, as it lacks the purple mark. This is the whitest of all Achimenes. Dr. Hopf is also a white longiflora which, perhaps, is not needed. A. longiflora rosea is like the type, except in color, which is, as the name denotes. Adèle de la Haute is also a rosy longiflora, but lighter in tint and desirable. Ambroise Verschaffelt is described by Van Houtte as being "white, reticulated with light pansy," which means that the white ground is covered with a network of violet lines. There is also a conspicuous violet blotch at one side of the orifice. This is a very striking and beautiful variety which ought to be in every collection. Diamond and Pulcherrima do not differ from it in the slightest degree; whoever has one of them has all three. This completes the varieties of A. longiflora kinds as far as my experience goes. There are many other species and hybrids which I will describe in another paper.

Canton, Mass. *W. E. Endicott.*

Greenhouse Work.

WE are now passing through the dullest part of the whole year, at least plants seem to improve less between the time of Chrysanthemums and the new year than at any other period. But this will soon be changed, for once in the new year the days soon lengthen, the sun gains power and work comes on apace. No work that can be done at this time should be neglected, for any headway made now is all clear gain when the busy season comes. All pots that have been used should be washed and stored away, each size separate. This seems hardly worth the telling, but we so often see a heap of dirty pots piled away, all sizes together, and most likely a fourth of them cracked or broken when they are wanted. We also make a practice at this season to get from the woods straight twigs for flower-stakes next summer. Cut and pointed at this time these are more durable than they would be if cut with the sap in them. After all, there is no plant-stake so inconspicuous as a young sapling, and the smallest twigs should be saved for staking Achimenes and other slender-growing plants. Such stakes as these are not of much value after one season's use and may be thrown away.

All bulbs that are stored away for the winter should be examined now. Begonias, Gloxinias and Amaryllis do not like a temperature lower than fifty degrees. We have had serious losses some years from too low a temperature, and on the other hand a relatively high temperature is harmful, because a proper season of rest is not allowed. Caladiums need a hot, dry place, and do well stored in a warm boiler cellar; if shaken out of the pots and put in dry sand, space is economized, and the pots can, meanwhile, be cleaned. Achimenes, too, can be treated in this way, but should not be kept so warm.

It seems early to begin propagating, but we always get in a few Carnation cuttings in December for early fall flowers. These are allowed to come in in the early part of October, or as soon as the outdoor supply of flowers is cut off by frost, the indoor Carnations not flowering until after the Chrysanthemums are past. Frame-grown Carnations are very useful in early autumn, but, to have them good, early propagation is desirable. We like to get in the main stock of plants for next winter bloom as near to the tenth of January as possible. The cuttings root readily then; they can be well hardened off after being rooted in preparation for transferring to the frames.

Small Ferns in most private gardens are a great help in all sorts of decorative work, but there is always considerable trouble experienced first in getting them, and afterward in keeping them small enough for dinner-table work. Last year we sowed a flat with spores of Adiantum cuneatum, and raised over a thousand plants. The spores were sown in January from fronds taken off old plants and laid in paper to dry; the flat was filled with the soil worked out of the Fern-roots used for Orchid potting; the top was sifted very fine and well watered, and the spores sown the next day. All this is simple enough, but the trouble begins when the young plants are large enough to be transplanted into other flats; however, with care, the loss will be very small and the gain considerable. The varieties of Pteris are common enough as self-sown plants, and it is only with the rare kinds that it is worth while to take the time and trouble to raise plants from spores.

If plenty of heat is at one's disposal it is better to get in cuttings of Crotons soon. They take some time to root, and will make fine plants in a season if the cuttings are taken early in the year and grown on rapidly. Crotons make fine decorative plants for the house and stand well in such conditions. They light up well and show most brilliant colors if grown with plenty of light in the growing season. They are not of much value in this state for outdoor decoration in summer, but farther south they are superb; I have seen them especially rich in color, in the city of Washington.

Seeds should now be selected from well-berried and shapely plants of Jerusalem Cherry, and sown the first week in January to produce good plants of a serviceable size for next fall. We have grown Benary's dwarf strain for several years, and these plants are most serviceable at this time of year. They are all thrown away when their season is over, and the older plan of cutting back and keeping over is superseded by sowing seed early and planting out-of-doors in summer.

Hybrid Roses that are wanted for early spring must now be put in a cool house, where the temperature does not exceed fifty at night for a start. We have adopted the plan of growing all in boxes now, and find this much the better way. If the plants have been two years in the same soil they may be taken out and planted in fresh material before starting them. The change does not cause much check if the work is carefully done, and if, as is most likely, the boxes are in an unsound condition. We are using Cypress lumber now for all boxes for use in the greenhouse. It is as cheap as good Pine and lasts much longer.

South Lancaster, Mass. *E. O. Orpet.*

Cyclamens.

TO the lover of Cyclamens these plants are most interesting now when they are coming into bloom, and especially so to any grower who, in former seasons, has taken the trouble to cross some of the varieties and to save their seeds. During recent years the varieties have been greatly improved, but there is still room for further advance, which means a more compact habit of growth and larger, well-formed flowers, of distinct and pleasing colors. In form of flower we aim to have long, broad petals, smoothly cut and erect, so that the flower has a compact and neat appearance. We often find it necessary to cross with flowers of inferior shape for the sake of their brilliant colors, and in many cases it takes several years of careful crossing before a really good form of flower is obtained. The plants selected for crossing should be set apart from the others and carefully labeled when they are in bloom. When the flowers are fully developed the pollen is easily shaken from the stamens on to a piece of paper or glass, and can be transferred to the other flowers as desired, with a camel's-hair pencil. The glass or paper must be carefully cleaned after each operation, so that the varieties may not become mixed. The seed plants must be carefully watered. An occasional application of weak liquid-manure is required if they are in any way pot-bound; this is necessary to insure sufficient nourishment for the plants and the proper development of the seeds. The seeds need close watching when they are ripening, as the capsules open when ripe and the seed is apt to be dropped and lost. Perhaps the best time for sowing the seed is during the month of October. It should be sown in pans or shallow boxes, which must be well drained. A mixture of leaf-mold and sand should be used, and the seeds scattered evenly over the surface and covered lightly with sand. They should be sprinkled with water through a fine rose and covered with glass. They should be placed in a temperature of seventy-five degrees and kept moist, but not soaked with water. When the seedlings have formed two or three leaves they will be large enough to handle, and should be transplanted into shallow boxes, about an inch apart each way, and the same compost used as before. Some sow the seed thinly in rows, and save transplanting by leaving them in the seed-box until they are large enough to be placed in pots. We find the change into fresh soil advantageous to the growth of the young plants. When the bulbs are about as large as peas they should be placed into thumb-pots, using the same compost for the first potting, but for the successive pottings a little pulverized sheep-manure should be added. About three shifts will be required, the final one into six-inch pots. During the winter and early spring months the plants should be kept in a light, airy house with a night temperature of sixty

degrees, and sprinkled overhead twice a day, but after the weather is warm enough they will do better in a cold frame, the pots being plunged to the rim in leaves, and the plants shaded lightly during the hottest part of the day. Plenty of air by night and day should be given when the weather is favorable. Watering and syringing must be carefully attended to, and a sharp lookout must be kept for green fly and other insects, as they would soon destroy the plants if allowed to get a footing. Should they appear, the plants must be fumigated or dipped in a solution of tobacco-water or other insecticide; the latter method is more troublesome, but is the more effective.

Tarrytown, N. Y. *William Scott.*

Spraying for Black-knot upon Cherries and Plums.

IN the spring of 1893 some experiments were begun at the Cornell Station to determine the value of the Bordeaux mixture in controlling the black-knot of Plums and Cherries. This disease has proved fatal to so many trees, and even entire orchards, that it is a continual menace to the growers of these fruits. It probably has caused greater losses in New York than the dreaded peach-yellows, and during some seasons it has spread with such rapidity that all efforts for its control were practically useless. The disease has consequently had its own way in the large majority of cases.

All scientists now agree in ascribing the cause of black-knot to a fungus; but, although the parasite has long been known, its life-history has not yet been completely worked out. It is known, however, that the fungus produces large numbers of spores, and these are supposed to obtain an entrance into the host plant some time during the warmer months. Just how or when this takes place still remains to be shown. Humphrey says * that the knots first appear in the fall as "slight swellings of the branch." I have failed to find any distinct indication of the knots before early spring; yet there appears to be little doubt of the fact that most, if not all, of the newly infested parts fail to show the presence of the fungus by the formation of new knots until the following spring or early summer. In other words, it now seems probable that infection takes place during one season, but well-developed knots do not appear until the following year.

Several experiments were planned with the above theory as a basis. The fungicide used was the Bordeaux mixture, as this has become to be recognized as our most efficient compound for the prevention of fungous diseases. The trees selected for the work were Plums and Cherries, but only one case, that of some Cherry-trees, will be here mentioned. The trees were mostly sprouts which had been allowed to grow to a height of eight to ten feet. They sprang from the roots of some Morello trees which were set many years ago, and at the time of the beginning of the treatments the old trees and the younger ones were thoroughly entangled, and they were also well covered with knots. The thicket, for so it might be called, was divided into two nearly equal parts by cutting out the brush on a line passing nearly through the centre. One part was sprayed, but the other remained untreated. No knots were cut out during the first year.

The first application was made March 29th, 1893, and this was followed by others upon the following days: April 18th, May 6th and 30th and June 13th. Notes taken June 13th show that new knots were forming as abundantly upon the treated as upon the untreated half. No further treatments were made during this year.

The first application in 1894 was made April 9th. This was repeated on the 25th of the same month, and at this time all the knots were removed from the entire thicket. They appeared to be equally abundant upon each plot, and for greater accuracy in drawing conclusions, the number cut from each side was counted. Additional applications were made May 21st, June 6th and 27th, July 10th and 20th and August 1st.

On November 26th all the knots were again cut out and counted. A comparison of the numbers of knots cut in the spring of 1894 and of those cut in the fall should indicate to a greater or less degree the value of the treatments. But whether the treatments of 1893 are wholly or only partially instrumental in bringing about the final result cannot now be stated with certainty. The results were these:

In the spring of 1894 the number of knots cut from the unsprayed trees was 2,002, and from the sprayed trees 1,155.

In the autumn of 1894 the number of knots cut from the unsprayed trees was 3,466, and from the sprayed trees 165.

These figures show an enormous gain in favor of the sprayed portion. And this gain is emphasized still more if it is assumed, as may justly be done, that the same ratio of increase in the number of knots shown in the unsprayed plot would also have taken place in the sprayed portion, provided no treatments had been made. In this case the 165 knots cut in the fall must be compared, not with the 1,155 knots cut in the spring, but with 2,000, since this is within a fraction of the number assumed to have been produced, had no application been made.

It cannot be held that absolute protection has been effected by the treatments, but it is not very often that such a statement can be made, even with plant-diseases, which are now regularly treated by the use of fungicides. One must also take into consideration that the sprayed trees were standing so near to the other portion of the row that the branches of the two lots almost touched each other. In addition to this, the knots had been allowed to remain on the trees until all the winter spores had been disseminated and the spread of the disease had been favored as much as possible. If we knew more regarding the time and manner of infection we should know better when and how to apply the treatment so that it would be most effective. If the results of further experimentation agree with the case mentioned above, we may soon have a definite direction for the treatment of this fungus as we now possess in the case of other plant-diseases over which we once had no control, but for which we now have practical and efficient remedies.

Cornell University. *E. G. Lodeman.*

[The practical importance of experiments on the best way of preventing diseases caused by fungi is so great that we invite attention to a few points in the interesting account given above. The fungus producing the black-knot has two well-known forms of spores—the ascospores, which mature in midwinter and are discharged in early spring, disappearing usually during the month of April, and the conidia, which mature in early summer. With regard to the existence of other forms of spores information is very scanty, but it is probable that, whatever may be the other forms, they mature in the autumn, or, at least, in late summer. Since the number of knots on the sprayed and unsprayed trees was not counted before the spraying, one cannot be certain that the numbers 2,002 and 1,155 do not represent the original proportion of knots on the unsprayed and sprayed trees previous to the experiments, especially in view of the statement that at the time the knots were cut and counted "they appeared to be equally abundant upon each plot." In other words, while at a rough estimate they seemed equally abundant, on actual count they were found to bear the proportion of 4 to 2.3.

A comparison of the figures given for 1893 and 1894 is interesting. On April 25th, 1894, all the knots were removed from both the sprayed and unsprayed trees, and yet on the following 26th November there were 3,466 knots on the unsprayed, and only 165 on the sprayed trees. This result, so very different from that of the previous year, leads us to examine more closely into the method of the experimenting during the two years. In 1893 the trees were sprayed on March 29th, April 18th, May 6th and 30th and June 13th; that is, they were sprayed at a time of the year when the Bordeaux mixture might be supposed to destroy the ascospores which were germinating and capable of producing new knots. On the other hand, the conidia of 1893 would not be matured naturally until after the date of the last spraying.

In 1894, however, the dates of spraying were April 9th and 25th, May 21st, June 6th and 27th, July 10th and 20th and August 1st. In 1894, therefore, the spraying began at a date when some of the ascospores might already have germinated, and was continued during the period when the conidia would have matured and germinated. We might then suppose, assuming the favorable result as shown by the proportion of 3,466 to 165 in November, 1894, to be due to the spraying, that the conidia were decidedly more active in spreading the knot than the ascospores. This involves also the supposition that the knots removed in November, 1894, were the result of infection by conidia during the summer of 1894. In such a case the knots, judging by previous experience, would have been small. On this

* Eighth Annual Report Massachusetts State Agricultural Station, p. 205.

point no statement is made. If this supposition is not correct, the question arises, How did the knots cut in November, 1894, arise? All the knots, both on sprayed and unsprayed trees, were removed on April 25th, 1894. If we admit that the removal was thorough, which implies that the branches were cut off several inches below the old knots, we cannot suppose that the new knots came from the continued growth of the mycelium of the old knots. If we are not to suppose that the new knots came from infection by conidia of 1894 we are forced to believe that they came from infection either by the conidia of 1893 or by infection from ascospores of 1894, which germinated previous to April 25th, when the spraying began. Mr. Lodeman appears to exclude the latter alternative since he states that he has "failed to find any distinct indication of the (new) knots before early spring"; that is, infection by ascospores early in spring, 1894, would not produce distinct new knots until the spring of 1895. We are left, then, with the supposition that the knots of November, 1894, came from infection by conidia of the summer of 1893, at a date when the spraying was discontinued, and we must also suppose that no knots were produced until the summer or autumn of 1894, since they would otherwise have been removed when all the knots were cut off in April, 1894. The action of the Bordeaux mixture in this case must then have been upon the mycelium in the branches before the knots formed, which is hardly probable, for, in other cases, its action consists mainly in checking the entrance of spores rather than in destroying the mycelium already in the interior of the branches.

It seems more probable, if we consider only the evidence given above, remembering how much more favorable the results were in 1894 than in 1893, and that in 1894 the dry months of summer especially favored spraying, that the great good done by the mixture in this case was by destroying the conidia produced in 1894. Against this supposition is the belief, held not only by the writer, but by many other mycologists, that the conidia matured in summer do not produce knots the same autumn. From the present experiments one is lead to ask, Is this view, held by many botanists, correct?—ED.]

Correspondence.

Pearson's Ironclad Grape.

To the Editor of GARDEN AND FOREST:

Sir,—In 1873, when the Grape-rot became epidemic at Vineland, New Jersey, I learned from Colonel Scott, then the President of Pennsylvania Railroad Company, that on his grounds near Darby, Pennsylvania, was a wild native Grape-vine, the fruit of which his gardener reported "free from the rot." I secured cuttings of this vine, and when they fruited I named it the Scott Grape. Later on, my father, then aged seventy-six years, told me he had gathered grapes from this old vine when a boy, about the year 1806, when the Scott place was owned by his great-grandmother, Mrs. Ash, and this wild Grape-vine, then an old one, furnished grapes for the neighborhood. There were then no Grapes cultivated in this country. This vine was known in its vicinity as the Ash Grape. It was said to have been bearing fruit when my ancestor, John Pearson, landed with William Penn at Chester, on the river Delaware.

Finding that its fruit was good and that it did not rot, I called attention to it as Pearson's Ironclad Grape, sending vines, cuttings and seed of it to France, Spain, Australia and California. French wine-makers pronounced it an excellent Burgundy Grape. At our National Viticultural Convention, in Washington, District of Columbia, 1886, I exhibited wine from the Ironclad, and it attracted much attention. Mr. Charles A. Wetmore, President of the Convention, styled this Ironclad juice, on account of its deep color, a true native American Ink! Writing, made with this juice, May 20th, 1886, is yet quite legible in 1894.

When Professors Viala, of France, and F. L. Scribner, Chief of Division of Vegetable Pathology of our Department of Agriculture, visited my vineyard in 1887, to inaugurate experiments against fungous diseases of the vine, we saw Pearson's Ironclad fruiting healthfully in the midst of rotting Concords. It was thought that this resistance to the rot germs might be due to a peculiar thickness or toughness of the grape's cuticle, but, upon comparison under the microscope of the skins of berries of the Concord, the Ives and the Ironclad, the professors pronounced the skin of the Ironclad the thinnest.

This vine has fruited here annually since 1876, yet its grapes have never rotted. Its foliage is infected by mildew, Peronospora Viticola, but this on the leaves does not harm the vine or its fruit. Perhaps this is because this Ironclad vine never stops growing until freezing weather stops it. It makes fresh canes and foliage constantly, until all are killed by frost. The sap seems to be never dormant here. No matter whether pruned in autumn or in the winter the cuts always bleed in mild weather. It is wonderfully vigorous, a cross apparently of Vitis Riparia and V. Labrusca. Its flowers have reflexed stamens, and, consequently, it is capricious in fruiting. If rains occur during the critical period of its blossoming its clusters are defective. I find, however, that this damage may be averted or mitigated by planting near it the male V. Rupestris, which blooms at the same time.

Clusters of Ironclad are small, compact, shouldered, sometimes doubly so; the size of the berry between that of Concord and of Clinton; the color black, and the juice a royal purple. It flowers early; sets fruit before Concord blossoms open; is fully colored by August 10th, but not fully ripe before September 25th; and the berries will hang fast on the vine till December.

Though good to eat when ripe, it is of no value for market as a table grape. It is essentially a wine grape. It makes a good stock to graft other varieties on, and for this is used in France and Spain, as it resists the phylloxera.

I have grafted on it other varieties of our Grapes, especially the Catawba, which is thus improved in quality and ripens earlier.

On its own roots this Ironclad is almost too rampant. The largest crop of grapes that I have taken in one season from one vine, when permitted to extend itself, was 396 pounds.

Vineland, N. J. *A. W. Pearson.*

Recent Publications.

The Flora of Nebraska, edited by the members of the Botanical Seminary of the University of Nebraska.

The members of the Botanical Seminary of the University of Nebraska, under the inspiration and instigation of Professor Charles E. Bessey, have for a considerable time been actively engaged in a botanical survey of that state, and have now begun the publication of an elaborate illustrated Flora. The arrangement of the Flora, Professor Bessey tells us, in his short introduction, will be from primitive and simple forms to those which are derived or more complex. Two parts have recently appeared. The first, embracing sixty-eight pages, illustrated with twenty-two plates, contains the description, chiefly by Mr. De Alton Saunders, of the green plants belonging to the Protophyta and Phycophyta, and of the fungi of these groups, by Messrs. Roscoe Pound and Frederick R. Clements. The second part, with nine pages and fourteen plates, by Mr. Albert F. Woods, is devoted to the Coleochætaceæ and the Characeæ. It is proposed to complete the work in twenty-five parts, the twenty-fifth being devoted to a catalogue of the plants of the state, to which will be added a host index of the parasitic fungi.

The region embraced within the limits of the state of Nebraska, extending from the valley of the lower Missouri to the eastern base of the outlying ranges of the Rocky Mountains, is one of the great meeting grounds of the eastern and western floras, which mingle here more freely, perhaps, than in any other part of the continent. According to Professor Bessey, "a careful study of the flora of Nebraska shows that not only all the great branches of the vegetable kingdom are represented, but that of the fifteen classes fourteen are represented, and that of the fifty-four orders forty-three are represented, while of the three hundred and eighty-six families there are representatives of about one-half. On the other hand, of the one hundred and seventy-five thousand species of plants now known, probably little, if any, more than two per cent. occur within our borders."

Notes.

Mr. Edward L. Greene, assistant professor of botany in the University of California, has been appointed professor of botany in the new "Catholic University of America," in the city of Washington.

The next meeting of the Western Horticultural Society, which is to be held in Rochester on the 23d and 24th of January, will commemorate the fortieth anniversary of that enterprising and useful organization.

A green-flowered sport of the Chrysanthemum Viviand Morel has appeared simultaneously in two different English collections. The variety has been propagated, and makes a healthy plant with heads of light pea-green florets, which are said to be attractive.

It is a good suggestion in *Meehans' Monthly* to gather seed from the plants of Cosmos which bloom the earliest. It is probable that by persistent selection a strain of early-flowering plants might be secured, and this would be a great gain in the case of a species which is always full of buds when the frost kills it.

Last week, after two or three days of warm rain, plants of Daphne Cneorum, in exposed locations, showed many full clusters of their pink flowers, fairly well formed. Of course, they lacked the delightful fragrance which they have in warm weather, but they looked as happy when surrounded by their evergreen foliage as any outdoor flower can look in the middle of December.

It is announced that the large growers of bulbs of Lilium Harrisii in the island of Bermuda have consolidated under the name of the Bermuda Bulb Company, with Mr. Frank Pierson, of Tarrytown, New York, as general agent for America and Europe. The object of the combination is said to keep prices firm, to supply high-grade bulbs only, and to correct the competition in cut flowers.

Another small consignment of five hundred pounds of the best English filberts, which are imported in the husks, has just been sent to Joseph Hahn & Sons, of this city. They come in small barrel packages, each of which contains a hundred pounds, and sell at retail for fifty cents a pound. These nuts have none of the dryness or toughness of the ordinary filberts, but have a crispness and delicacy of flavor which is altogether distinct.

In an address before the Boston Florists' Club, Mr. P. O'Mara, of this city, suggested that flower shows might be made more interesting and instructive if some horticultural operations could be seen in progress. For example, a booth where budding and grafting was performed by some expert, who would also be ready to answer the questions of visitors, would prove a certain attraction. Plants illustrating proper and improper pruning, plants showing the work of various insects and fungi, with their correct names, and object-lessons in other horticultural matters, would be sure to add to the popularity and usefulness of these exhibitions.

Few plants have occasioned more discussion in this country than the Japanese Wineberry, Rubus Phœnicolasius, and it is now receiving considerable attention in the horticultural journals of Great Britain. The fruit as it appears there is described as bright red, of an agreeable, brisk flavor, with none of the mawkish taste which makes blackberries unpleasant to some persons. The fruit begins to ripen early in September, and continues for three weeks. The bright color of the stems of the plant in early spring before the leaves appear is caused by its abundance of slender spines. Its appearance at this season is considered highly ornamental, so that it is recommended for the shrub border for this reason alone.

Large and beautiful Japanese persimmons, from California, are still in the market, and enterprising growers of this fruit are endeavoring to popularize it by every means possible. One method of work in this direction is to wrap every fruit in a square of thin paper on which are printed the following directions: "Place this fruit on a shelf or sideboard for ornament until it becomes soft. It will shrink somewhat and turn to a darker color; it must not be eaten until it is soft in every part, which will be the case if it ripens properly. It should then be peeled from the apex. The thin skin will leave the pulp readily." To this we may add that a Japanese persimmon, when set in a cut-glass or silver cup of proper size is a beautiful object. It is also very nutritious, and when properly cooled its delicate flavor is very refreshing. It certainly must prove one of our most popular dessert fruits when better known.

The disastrous experience with Christmas trees last year, when dealers were not only unable to dispose of their stock profitably, but were compelled to go to the expense of carting it away in addition to the original outlay for cutting and bunching and transportation to the city, has had the natural effect of reducing the supply in the market this year. No more than eighty car-loads are now on sale, as against 140 car-loads last year. Prices, however, rule much higher. Bundles containing four trees, six feet tall, sell this year for seventy-five cents to a dollar at wholesale, and tall trees twenty-five feet high bring $5.00 to $8.00 each. This is for the best trees from Maine, which always command the highest prices, because they are shorter-jointed, better furnished and are said to hold their foliage better than those from the Catskills, the Adirondacks and western Massachusetts. Nearly half of the entire supply comes from Maine. As usual, the trees are mostly Balsams, although there are a few Black Spruces and Hemlocks.

A correspondent of the *Revue Horticole* states that the depth to which the seeds of Half-long varieties of Radish are covered makes a great difference in the roots. Experiments were made during the year at the establishment of Messrs. Vilmorin, where the seeds of three kinds of Radishes were sown in the beginning of July in two beds near each other and prepared in the same manner. In one bed the seed was covered to a depth of four-fifths of an inch, and in the other it was planted twice as deep. In the case of all the varieties the seed most deeply covered produced roots which were longer, more regularly cylindrical, cleaner, and in every way better formed than the others. Many of the roots from the shallow-covered bed were short, misshapen, and had fibrous rootlets on the sides. This point is well worth attention in growing Radishes for the home-garden, while to market-growers, who wish to have crops of roots which are so regular in size that they can be bunched for sale without any lost time in sorting, the gain from deep planting would be very considerable.

The planting of Swainsonia for cut flowers in this country began, we believe, in Philadelphia, and it is still more largely grown near that city than elsewhere. In the last number of the *Florists' Exchange* it is said that David Cliffe, of Germantown, has a house ninety feet long by sixteen wide, with centre and side benches, filled with these plants. These benches were filled with soil without any manure, and the plants put in about eighteen inches apart last May. They are now about three feet high, very bushy, and covered with flowers. As Swainsonia has a habit of climbing, some method must be devised for keeping it dwarf. To bring this about, the surface of the soil is not loosened up, but is allowed to become hard under constant watering. The plants thus treated are short jointed, and they flower freely at every joint. The flowers are cut and put in water in a cool place ten or twelve hours before shipping, and they have been shipped one hundred and twenty miles and were in good condition for use four days later. Single flowers sell at the prices of carnations, and Mr. Cliffe's house will yield five hundred sprays for Christmas week, at from eight to ten cents each. No manure-water or any other feeding has been resorted to, as the plants seem to flower better in poor soil than otherwise.

An illustrated bulletin of twenty-odd pages, Farmers' Bulletin No. 20, has just been published by the authority of the Secretary of Agriculture, under the title of "Washed Soils and How to Prevent Them." Along the banks of the Ohio, and in many portions of the south, there are thousands of acres once under cultivation which are now furrowed all over with gulleys, like the wrinkles of age, and abandoned to brush and briers. All the surface of good agricultural soil which has accumulated by the slow decay of rocks and the accumulation of humus for centuries has been washed away in a few years, owing to the carelessness of man. The purpose of this little treatise is to show how to prevent this excessive erosion and the best means of recovering fields which have already lost the greater part of their tillable soil. The methods of treatment by chemical means which change the texture of the soil, by cultivating and underdraining, by reforesting, and by binding the soil with Grass and other vegetation, are explained as clearly as possible in the brief limits of this bulletin, and the illustrations are really helpful additions to the text. This bulletin ought to be studied by every farmer who has fields that are subject to the denuding action of running water, and every observing reader will find it interesting.